

REMARKS

In response to the Official Action of 25 September 2008, wherein the Examiner has requested an election as between (a) the inventions identified in Groups I to XVI on pages 2-3 of the Official Action, and (b) the specific amino acid and nucleic acid sequences identified in the paragraph bridging pages 5-6 of the Official Action, Applicants hereby provisionally elect with traverse the invention of Group I and the amino acid sequence of SEQ ID No 10 (amino acid) which correspond to the nucleic acids of SEQ ID Nos 7 and 9. The traverse is for the reasons next discussed.

As recognized by the Examiner, PCT unity of invention practice applies to the election herein and, with respect to (b) above, the PCT requirements thereof are met when the alternatives of the claimed Markush group are of similar nature. See PCT Administrative Instructions at Annex B. As discussed in Annex B, when the Markush grouping is for alternatives of chemical compounds, they shall be regarded as being of a similar nature where the following criteria are fulfilled: (A) all alternatives have a common property or activity, and (B) a common structure is present, i.e., a significant structural element is shared by all of the alternatives. Section (f)(i)(B)(1). With respect to this section, Annex B provides:

“(ii) In paragraph (f)(i)(B)(1), above, the words ‘significant structural element is shared by all of the alternatives’ refer to cases where the compounds share a common chemical structure which occupies a large portion of their structures, or in case the compounds have in common only a small portion of their structures, the commonly shared structure constitutes a structurally distinctive portion in view of existing prior art, and the common structure is essential to the common property or activity. The structural element may be a single component or a combination of individual components linked together.”

As next discussed, Applicant respectfully submits that the proteins of SEQ ID Nos 2, 4, 6, 10, 18 and 20 (and the DNA sequences encoding them) satisfy these provisions.

In contrast to the Examiner’s statement that SEQ IDs 2, 4, 6, 10, 18, 20 represent products of unrelated structure and function, the identified SEQ IDs represent initial natural protein (SEQ ID NO: 2) and its mutants with few sequence modifications. All the identified SEQ IDs have GFP-like domain contributing in fluorescent properties with regions of **high homology** over the amino acid sequences and are significantly different from other known fluorescent proteins (sequence identity is less than 55% and characteristic gap profile is present). This is shown by the sequence alignment submitted herewith.

In view of the above the Applicant respectfully submit that the claimed SEQ IDs 2, 4, 6, 10, 18, 20 have a common core structure sufficient to meet

applicable PCT requirements. In contrast to the Examiner's statement that the sequences do not meet the criteria of (A), common property or activity, the proteins of SEQ IDs 2, 4, 6, 10, 18, 20 are fluorescent proteins capable to produce fluorescent signal when expressed in host cells (differences in excitation and emission spectra easily achieved by single residue substitutions are well known in the art and do not require different process of detection, which may be done via same instrumentation and also using simple eye visualization). Therefore, Applicants respectfully submit that restriction between SEQ IDs 2, 4, 6, 10, 18, 20 is improper and respectfully requests withdrawal thereof.

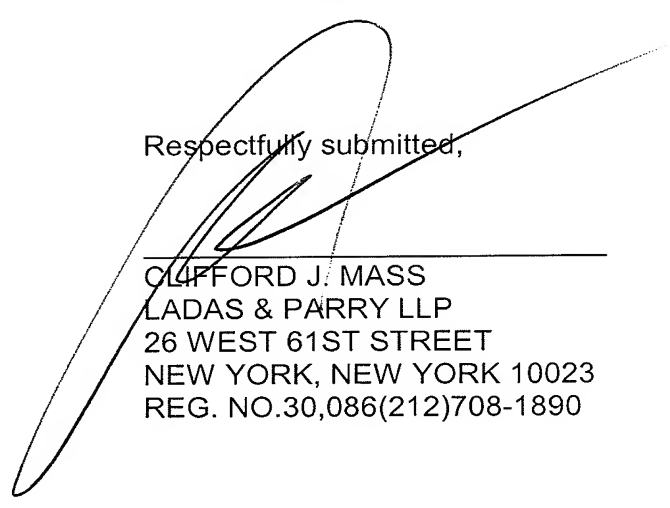
Regarding the restriction of Groups I and II, Applicants submit that identification of these groups as nucleic acids and host cells alone fails to establish a lack of technical interrelationship of corresponding special technical features. The only acquired property (which is fluorescence) of host cells (including transgenic cells), or progeny thereof, as claimed arises due to introduction of the nucleic acid molecule encoding the fluorescent protein (Group1) inside the host cells. Applicants have amended the claims accordingly for clarity. The inventions claimed in claims 7 and 8 can be considered as use of a nucleic acid molecule of claim 1. Therefore, Applicant respectfully submits that restriction between Groups 1 and II is improper and respectfully requests withdrawal thereof. Applicant directs the Examiner's attention that examination of nucleic acids, vectors, expression cassettes, and host cells comprising said nucleic acids together (within one invention group) is envisaged by PCT Rule 13.2 and is a common practice in US Patent examination.

Regarding the restriction of Groups I and V, Applicants submit that the restriction between Groups 1 and V is improper and respectfully requests withdrawal thereof because these Groups relate to the nucleic acid and method of its use in a recombinant DNA technique for making a protein or polypeptide encoded by a nucleic acid molecule of claim 1. See PCT Rule 13.2.

The claims have been amended in view of the above election. Applicants respectfully note that the recitation in amended claim 1 and new claim 27 of at least 85% identity draws support from the specification as filed at, for example, page 7, lines 25-28. The recitations in new claim 29 draw support from the specification as filed at, for example, page 8, lines 11-20.

In view of the above, Applicants have now complied with all requirements of the aforementioned Official Action, and now respectfully request an early examination on the merits of at least the elected claims.

Respectfully submitted,



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ppluGFP1 and laesGFP are copepoda fluorescent proteins
A.s._FP595, A.m._FP486, Zoan_FP506 are coral polyps fluorescent proteins
GFP are fluorescent protein from Aequorea Victoria
TagGFP are mutant fluorescent protein from Aequorea macrodactyla

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                *          20          *          40          *
SEQIDNO_02 : MS AL H KI M G VDGHTF I GKGYG SVGK D---AQ I : 47
SEQIDNO_04 : MP AL H KI M G VDGHTF I GKGYG SVGK D---AQ I : 47
SEQIDNO_08 : MS AL H KI M G VDGHTF I GKGYG SVGK D---AQ I : 47
SEQIDNO_10 : MS AL H KI M G VDGHTF I GKGYG SVGK D---AQ I : 47
SEQIDNO_18 : MS AL H KI M G VDGHTF I GKGYG SVGK D---AQ I : 47
SEQIDNO_20 : MS AQ H KI M G VDGHTF I GKGYG SVGK D---AQ I : 47
SEQIDNO_06 : MP AL H KI M G VDGHTF I GKGYG SVGK D---AQ I : 47
ppluGFP1 : -----MPAMKIECRISGTLNGVVFELVGGEGIPEQGR T---NKMK : 39
laesGFP : -----MPVMKIECRISGTMNGEEFELVGAGDG TDEGR T---NKMK : 39
DsRed : MR SKN IKEFMR K RM GTVNGHEFEIEGEGEGRPYEGHN--TVKLKV : 48
A.s._FP595 : MA ---FLKKTMT KTTI GTVNGHYFKCTGKGEG PFEGTQ--EMKIEV : 45
A.m._FP486 : MALSNKFIGDDMKMTYHMDGCVNGHYF V GEGNGKPYEGTQTSTFKVTM : 50
Zoan_FP506 : MAQSKHGLTKEMTMKYRM GCVDGHKFVITGEGIGYPFKGKQ--AINLCV : 48
GFP : MSK EE T VV I I LDG VNGHKF VS GEGEG TYGK T---LK I : 47
TagGFP : MSK EE T IV V I LDG VHGHKF V GEGEG DYGK E---IK I : 47
M sg f g 6p e6eG 61GH F 6 G G G a G4 f6

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                60          *          80          *          100
SEQIDNO_02 : GDVP WSL YGA F YGPEL --DFYK C PEGY ERT : 95
SEQIDNO_04 : GDVP WSL YGA F YGPEL --DFYK C PEGY ERT : 95
SEQIDNO_08 : GDVP WSL YGA F YGPEL --DFYK C PDGY ERT : 95
SEQIDNO_10 : GDVP WSL YGA F YGPEL --DFYK C MPDGY ERT : 95
SEQIDNO_18 : GDVP WSL YGA F YGPEL --DFYK C MPDGY ERT : 95
SEQIDNO_20 : GDVP WSL YGA F YGPEL --DFYK C MPDGY ERT : 95
SEQIDNO_06 : GDVP WSL YGA F YGPEL --DFYK C PEGY ERT : 95
ppluGFP1 : S K GALTFSPYLLSHV GYGFYHFGTYP SGYEN-PFLHAANNNGYTNTRI : 88
laesGFP : S K GPLSFSPYLLSHI GYGFYHY TEPAGYEN-VYLHAAKNGYTNTRI : 88
DsRed : TKGCPLPFAWDILSPQFQYGSKVYV HPADIP--DYKLSFPEGFKWERV : 96
A.s._FP595 : IEGCPLPFAFHILS CMYGSKTFI YVSGIP--DYFKQSFPEGFTWERT : 93
A.m._FP486 : ANGCPFAFSFDILS VFKYGNR FTAYPTSM--DYFKQAFPDGMSYERT : 98
Zoan_FP506 : VEGCPLPFAEDILSAAFNYGNRVFTEYPQDIV--DYFKNSCPAGYTWDERS : 96
GFP : GPKLP WPL L FSYGVOCFS YPDHM QHDFFK A PEGY ERT : 97
TagGFP : GPKLP WPL L FSYGIQCF YPEHM MNDFFK A PEGY ERT : 97
cttG 6Pvp5 tLvt 5G qc5a 5 6k D55Ks mP G5 qER3

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                *          120          *          140          *
SEQIDNO_02 : FEG GV -- A EN VY R KLNGQCF KDGHVL N E F : 143
SEQIDNO_04 : FEG GV -- A EN VY R KLNGQCF KDGHVL N E F : 143
SEQIDNO_08 : FEG GN -- A EN VY R KLNGQCF KDGHVL N E F : 143
SEQIDNO_10 : FEG GN -- A EN VY R KLNGQCF KDGHVL N E F : 143
SEQIDNO_18 : FEG GN -- A EN VY R KLNGQCF KDGHVL N E F : 143
SEQIDNO_20 : FEG GN -- A EN VY R KLNGQCF KDGHVL N E F : 143
SEQIDNO_06 : FEG GN -- A EN VY R KLNGQCF KDGHVL N E F : 143
ppluGFP1 : EKYEDGGVLH--VSFSYR EA RVIGDFKVVGT CFPEDSVIFTDK IR-S : 135
laesGFP : ERYEDGGIIS--VNFTYR EGKNVIGDFKVVGS CFPANSVIFTDK IK-S : 135
DsRed : NFEDGGVVVT--VTQDS LQD CFYIKV KFIGVNFPSDGPVMO KTMG-W : 143
A.s._FP595 : T YEDGGFLT--AHQDT LDGDCLVYK KILGNFNPADGPPVMQNKAGR-W : 140
A.m._FP486 : F YEDGGVAT--ASW S LKGNCFEHKSTFHGVNFPADGPPVMA KTTG-W : 145

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Zoan_FP506 : FLFEDGAVCICNADITVEENCMYHESKFYGVNFPADGPVMKMTDN-W : 145
 GFP : FFKDIGN--PAVKEGDILVNRLELKGIDFREDGNILHK--Y : 145
 TagGFP : FFQDIGN--RGVKEGDIILVNRLELKMDFREDGNILHK--F : 145
 t52 dG k tr e 2 g 6 n4 K6 G gFk 1G 66gk e n5

160 * 180 * 200
 SEQIDNO_02 : T CL I G QANH LKSA M EIT SKED VADET T G P- : 192
 SEQIDNO_04 : T CL I G QANH LKSA M EIT SKCD VADET T G P- : 192
 SEQIDNO_08 : T CL I G QANH LKSA M EIT SKCD VADET T G P- : 192
 SEQIDNO_10 : T CL I G QANH LKSA M EIT SKCD VADET T G P- : 192
 SEQIDNO_18 : T CQ I G QANH LKSA M EIT SKCD VADET T G P- : 192
 SEQIDNO_20 : T YQ I G QANH LKSA M EIT SKCD VADET T G P- : 192
 SEQIDNO_06 : T CL I G QANH LKSA M EIT SKCD VADET T G P- : 192
 ppluGFP1 : NATVEHLHPM-GDNVIVGSEARTFSLRD--GGYSFVVDSHMHFKSAIHP : 182
 laesGFP : N TCEHI PK-GDNILVNA TRTWMLRD--GGYSQVNNHLHFKTAMHP : 182
 DsRed : EASTERL PR--DGVLKGEIHKALKLKD--GGHYVEFKS YMAK--KP- : 186
 A.s._FP595 : E ATEIV EV--DGVLRGQSLMALKCP--GRHTCHLHTTYRSK--KPA : 184
 A.m._FP486 : D SFEKMTVC--DGILKGDVTAFLMLQ--GGNYRCQFHTSYKTK--KP- : 188
 Zoan_FP506 : E SCEKIIPVPKQGILKGDVSYLLLLKD--GGRRCQFDT YKAKS-VP- : 191
 GFP : NS INV IMA KQKN IKVN RENTED--GSVQADHYQTEDSP- : 192
 TagGFP : NS INV IMP KANN LKVN RENTED--GGVQADHYQTIVGDSPP- : 192
 ph y6 d 1 g64 k h 6 g G adh q n p g gP

* 220 * 240
 SEQIDNO_02 : --VHVPEHHIYH TL SKVDH ENMS VET RAVDCRK---T L- : 234
 SEQIDNO_04 : --VHVPEHHM YH TL SKVDH ENMS VET RAVDCRK---T L- : 234
 SEQIDNO_08 : --VHVPEHHM YH KLSKVDH ENMS KET RAVDCRK---T L- : 234
 SEQIDNO_10 : --VHVPEHHM YH KLSKVDH ENMS KET RAVDCRK---T L- : 234
 SEQIDNO_18 : --VHVPEHHM TH KLSKVDH ENMS KET RAVDCRT---A L- : 234
 SEQIDNO_20 : --VHVPEHHM TH KLSKVDH ENMS KET RAVDCRK---T L- : 234
 SEQIDNO_06 : --VHVPEHHM YH KLSKVDH ENMS KET RAVDCRK---T L- : 234
 ppluGFP1 : --SILQGGSMFAFRRVEELHSNTELGIVEYQHAFKTPATAFA----- : 222
 laesGFP : --TMLQGGSMFTYRKVEELHSQSDVGIVEYQH FKTPTATAFA----- : 222
 DsRed : --VQLPGYYVDSKDI SHNE-DYTIVEQYERTEGRHHLFL----- : 225
 A.s._FP595 : SALKMPG HFEDHR EIMEEVE-KGKCYKQYEA AVGRYCDAAPSKLGHN : 232
 A.m._FP486 : --VTMPPNHVVEHRAR DLDKGGNS-VQ TEHAVHITSVVPF----- : 229
 Zoan_FP506 : --RKMPD HFIOHK TREDRSDAKNQKWH TEHAISG-SALP----- : 231
 GFP : --VLLPDNHYL TQSAL S PNEKEH MVLEF T AGITHGMDEL K- : 238
 TagGFP : --VLLPINHYL TQTAL S RNETR HMVLEFFS C GHTHGMDEL K- : 238
 6 6P H 6 6 kd rd 6 1 2 a y